COX FIRE PROTECTION

7910 PROFESSIONAL PLACE
TAMPA, FLORIDA 33637

PHONE: (813) 980-3282
FAX: (813) 980-0631
WEB: COXFIRE.COM

HOME DEPOT RENOVATION LAKE CITY

3-2-4356-23-23

FIRE SPRINKLER
Product Data

SUBMITTED: 8/14/2023

Table of Contents

HOME DEPOT RENOVATION LAKE CITY

3-2-4356-23-23

SPRINKLERS:	TYCO TY9128 BRASS UPRIGHT EC-25 SPRINKLER TYCO TY3251 CHROME RECESSED PENDENT SPRINKLER TYCO TY4131 BRASS UPRIGHT FIRE SPRINKLER
PIPE:	SCHEDULE 10/SCHEDULE 40 BLACK STEEL PIPE
FITTINGS:	BLACK DUCTILE IRON FITTINGS GROOVED FITTINGS GROOVED COUPLINGS
HANGERS:	LISTED HANGER RINGS LISTED ALL THREAD ROD LISTED BEAM CLAMPS

*ALL PRODUCTS USED ARE U.L. LISTED AND/OR F.M. APPROVED FOR USE IN FIRE SPRINKLERS SYSTEMS

Model EC-25 Extended Coverage Upright Sprinklers K-factor 25.2 (360)

General Description

TYCO Model EC-25 Extended Coverage Upright Sprinklers are UL Listed standard response, extended coverage sprinklers for Storage Protection (Area/Density) and FM Approved quick response, extended coverage sprinklers for storage and non-storage applications. Their use is especially advantageous as a means of decreasing the number of required sprinklers to protect occupancies requiring an area/density application of water.

In addition, these sprinklers may be used in accordance with the new Chapter 21 of the 2013 edition of NFPA 13. As such, tables 21.2.2 and 21.3.2 of NFPA 13 may be utilized for design options.

These sprinklers offer a maximum coverage area of 196 ft² (18,2 m²), which is almost double the area offered by standard coverage sprinklers used for similar applications.

The Model EC-25 Upright Sprinklers comply with the criteria for the protection of retail stores as described in the 2010 Edition of NFPA 13, Section 20.3.

Where the FM Approval is utilized, the Model EC-25 Upright Sprinkler has successfully undergone full-scale fire testing at FM Global for ceiling-only storage and non-storage applications. When used in conformance with applicable FM Global Property Loss Prevention Data Sheets, the Model EC-25 Sprinkler provides low hydraulic demand, the spacing advantages of extended coverage, and the obstruction benefits of an upright sprinkler.

For more information on applications and benefits of the Model EC-25 Sprinkler, refer to the available white papers at www.tyco-fire.com.

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

NOTICE

The Model EC-25 Upright Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction (e.g., FM Global). Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

Sprinkler Identification Number (SIN)

TY9128

Technical Data

Approvals

- UL and C-UL Listed
- FM Approved
- NYC under MEA 355-01-E

(Approvals only apply to the service conditions indicated in the Design Criteria section.)

Maximum Working Pressure
175 psi (12,1 bar)

Pipe Thread Connection

- 1 inch NPT
- ISO 7-R1

Discharge Coefficient
K=25.2 GPM/psi$^{1/2}$ (362,9 LPM/bar$^{1/2}$)

Temperature Ratings
165°F (74°C)
214°F (101°C)

Maximum Coverage Area
196 ft² (18,2 m²)

Finish
Natural Brass

Physical Characteristics

Frame	Brass
Deflector	Copper
Compression Screw	Stainless Steel
Hook	Monel
Strut	Monel
Link Assembly	Solder, Nickel
Button	Brass
Sealing Assembly	Beryllium Nickel w/TEFLON
Ejection Spring	Inconel
Deflector Nut	Brass

Operation

The fusible link assembly is comprised of two link halves that are joined together by a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate, allowing the sprinkler to activate and flow water.

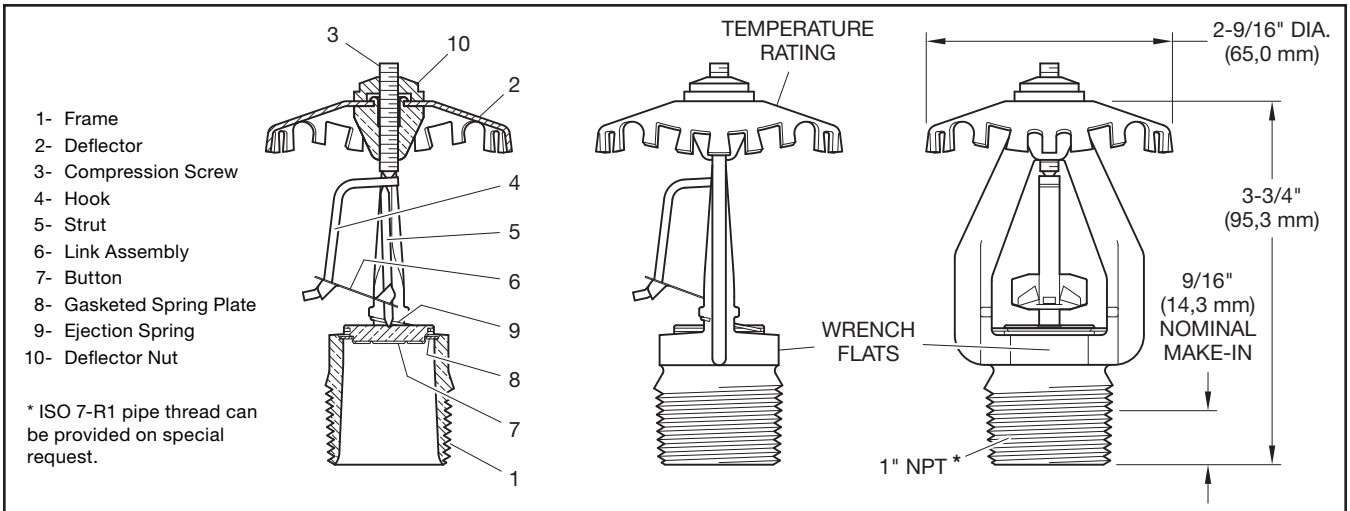

FIGURE 1
MODEL EC-25 EXTENDED COVERAGE UPRIGHT SPRINKLER

Design Criteria

UL AND C-UL LISTING CRITERIA

NFPA 13, Chapter 12 through 20 - Density/Area Design
The TYCO Model EC-25 Extended Coverage Upright Sprinklers (TY9128) are UL and C-UL Listed for installation in accordance with the extended coverage upright spray sprinkler requirements of NFPA 13 or other applicable NFPA standards when used in conjunction with the following guidelines:

- Suitable for the protection of extra hazard and high-piled storage occupancies where area/density design criteria are provided.
- Suitable for "unobstructed" or "noncombustible obstructed" construction.
- The Model EC-25 Sprinklers having been specifically tested and listed for noncombustible obstructed construction are suitable for use within trusses or bar joists having noncombustible web members greater than 1 inch (25,4 mm) when applying the 4 times obstruction criteria rule defined under "Obstructions to Sprinkler Discharge Pattern Development".
- The maximum coverage area per sprinkler is 196 ft² (18,2 m²).
- The maximum distance between sprinklers is 15 feet (4,6 m) when the coverage area does not exceed 144 ft² (13,4 m²), and the maximum distance between sprinklers is 14 feet (4,3 m) when the coverage area does not exceed 196 ft² (18,2 m²).
- The minimum distance between sprinklers is 8 feet (2,44 m).
- The minimum flow requirement is based on the design density applied over the actual coverage area per sprinkler.

  For example: when sprinkler spacing is 14 ft. x 12 ft. - 6 in. (4,3 m x 3,8 m) or 175 ft² (16,3 m²), and the design density is 0.6 GPM/ft² (24,4 mm/min), the sprinkler design flow rate is 105 GPM (397 LPM) and the required design pressure is 17.4 psi (1,2 bar).
- The minimum clearance between the deflector and the top of storage is 36 inches (0,9 m). For clearances of 36 inches (0,9 m) up to 48 inches (1,21 m), the minimum design pressure is 22 psi (1,52 bar). For clearances of 48 inches (1,21 m) and greater, the minimum design pressure is established by the minimum flow requirement. However, the pressure can never be less than 7 psi (0,5 bar).
- Ordinary and intermediate temperature rated Model EC-25 Sprinklers have been investigated for use in high-piled storage occupancies at the hydraulic demand normally associated with high temperature sprinklers. As such, the Model EC-25 Sprinklers are listed storage sprinklers having a K-factor greater than 11.2 (161,4) and having ordinary and intermediate temperature ratings (that is, 165°F or 74°C and 214°F or 101°C). Consequently, the Model EC-25 Sprinklers, in accordance with NFPA 13, may be used in conjunction with the density curves for high temperature sprinklers.
- NFPA obstruction rules for Extended Coverage Sprinklers must be utilized.

System Type
Wet pipe, dry pipe, and preaction systems are acceptable.

FM APPROVAL CRITERIA FM LOSS PREVENTION DATA SHEETS 2-0, 3-26, 8-9

The TYCO Model EC-25 Extended Coverage Upright Sprinklers (TY9128) are FM Approved to be utilized in accordance with the following guidelines.

Application
The Model EC-25 Extended Coverage Upright Sprinklers are FM Approved ceiling-level Storage Sprinklers for storage occupancy hazards and other similar high heat release type fires. When compared with other FM Approved Storage Sprinklers, the Model EC-25 Sprinkler provides low hydraulic demand, the spacing advantages of extended coverage, and the FM obstruction benefits of an upright sprinkler.

Model EC-25 Sprinklers should be used in conformance with applicable FM Global Property Loss Prevention Data Sheets.

Hydraulic Design
To determine the hydraulic design for the Model EC-25 Sprinkler refer to the applicable FM Global Property Loss Prevention Data Sheet.

System Type
Wet-pipe systems only.

Sprinkler Spacing
The maximum coverage area per sprinkler is 196 ft² (18,2 m²). The minimum coverage area per sprinkler is 100 ft² (9,3 m²). The maximum distance between sprinklers is 14 ft. (4,3 m). The minimum distance between sprinklers is 10 ft. (3,05 m).

Note: When a wall or obstruction makes a minimum spacing of 10 ft. (3,05 m) impossible, consult FM Global Property Loss Prevention Data Sheet 2.0 for applicable guidelines.

Sprinkler Location
Locate sprinklers with respect to the ceiling/roof in accordance with FM Global Property Loss Prevention Data Sheet 2.0.

Obstructions
Follow the obstruction requirements as detailed in FM Global Property Loss Prevention Data Sheet 2.0.

Other Details
All other design details should be in accordance with FM Global Property Loss Prevention Data Sheet 2.0 as well as any other applicable FM Global Data Sheet.

NFPA 13, CHAPTER 21 - ALTERNATIVE SYSTEM DESIGN

The TYCO Model EC-25 Extended Coverage Upright Sprinklers (TY9128) have successfully undergone large-scale fire tests at Factory Mutual to comply with Chapter 21 of NFPA 13, 2013 Edition. As such, Tables 21.2.2 and 21.3.2 of NFPA 13 may be utilized for design options with the Model EC-25 Upright Sprinklers for providing ceiling-only protection.

This allows for the protection of Palletized, Solid Piled, Bin Box, Shelf, or Back-to-Back Shelf Storage as well as Single, Double, and Multiple Row Open Rack protection of up to 30 ft. (9,1 m) of Cartoned Unexpanded Group A Plastic Commodities in a maximum 35 ft. (11 m) ceiling condition with extended spacing up to 196 sq. ft. while maintaining very reasonable flow and pressure requirements. Pipe sizes as well as water supply requirements can now be kept to a minimum when compared to other design methods for high piled storage challenges. Refer to Tables A and B of this data sheet for specific flow, pressure, and number of sprinklers to be calculated.

Construction Type For NFPA 13, Chapter 21, -
Alternative Systems Designs
In accordance with NFPA 13 for Extended Coverage Sprinklers for High Piled Storage.

Obstruction Criteria for NFPA 13 Chapter 21 -
Alternative Systems Design
Follow Sections 8.8.5.1, (Extended Coverage Obstruction Guidelines for Sprinkler Discharge Pattern Development); 8.12.5.2 and 8.12.5.3 (ESFR Obstruction Criteria for obstruction that prevent the pattern from reaching the hazard below).

- Exception: When using the Upright EC-25 Sprinkler, any continuous obstruction 4 inches (100 mm) or less shall be permitted to be ignored in accordance with NFPA 13, section 21.5.3.2.3.

Deflector Distance Below Ceiling
Follow NFPA 13, Section 8.8.4 for allowed deflector distances below ceiling.

Clearance to Storage
Minimum 36 inches from deflector to top of storage required.

Maximum Distance Between Sprinklers
14 feet

Minimum Distance Between Sprinklers
10 feet

Installation

The TYCO Model EC-25 Upright Sprinklers are to be installed in accordance with this section.

Damage to the fusible Link Assembly during installation can be avoided by handling the sprinkler using only the frame arms and the appropriate sprinkler wrench. Do not grip or apply any force to the Fusible Link Assembly. Damaged sprinklers must be replaced immediately.

A leak-tight 1 inch NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 20 to 30 ft.-lbs. (26,8 to 40,2 Nm). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Step 1. Install the Model EC-25 Sprinkler in the upright position.

Step 2. With pipe-thread sealant applied, hand-tighten the sprinkler into the sprinkler fitting. Do not apply any force to the Link Assembly, and handle the Model EC-25 Sprinkler only by the Frame arms.

Step 3. Wrench-tighten the Model EC-25 Sprinkler using only the W-Type 1 Sprinkler Wrench (Figure 2) and by fully engaging (seating) the wrench on the sprinkler Wrench Flats.

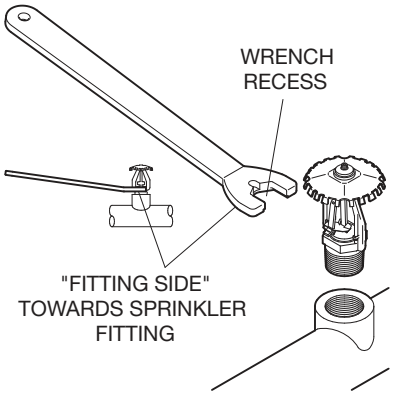

FIGURE 2
W-TYPE 1
SPRINKLER WRENCH

Step 4. After installation, inspect the Link Assembly of each Model EC-25 Sprinkler for damage. In particular, verify that the Link Assembly and Hook are positioned as illustrated in Figure 1, and that the Link Assembly has not been bent, creased, or forced out of its normal position in any way. Damaged sprinklers must be replaced immediately.

Care and Maintenance

The TYCO Model EC-25 Upright Sprinkler must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection system from the proper authorities and notify all personnel who may be affected by this decision.

Inspection, testing, and maintenance must be performed as indicated below and in accordance with the local requirements and/or national codes. Any impairment must be immediately corrected.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of any authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Storage Arrangement	Commodity Class	Max. Storage Height		Max. Ceiling/ Roof Height		Type of System	Number of Design Sprinklers	Min. Operating Pressure	Max. Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
		ft	m	ft	m						
Palletized, Solid-Piled, Bin Box, Shelf, or Back-to-Back Shelf Storage	Class I through Class IV, encapsulated and unencapsu-lated, and cartoned non-expanded plastics	25	7,6	30	9,1	Wet	6	30 psi (2,1 bar)	14 ft x 14 ft (4,3 m x 4,3 m)	250 gpm (950 L/min)	1
		30	9,1	35	11	Wet	8	40 psi (2,8 bar)	12 ft x 12 ft (3,7 m x 3,7 m)	250 gpm (950 L/min)	1
		30	9,1	35	11	Wet	8	40 psi (2,8 bar)	14 ft x 14 ft (4,3 m x 4,3 m)	500 gpm (1900 L/min)	1.5

TABLE A
NFPA 13, CHAPTER 21 - ALTERNATIVE SYSTEM DESIGN
PALLETIZED, SOLID-PILED, BIN BOX, SHELF, OR BACK-TO-BACK SHELF STORAGE
OF CLASS I - IV AND CARTONED NON-EXPANDED PLASTIC COMMODITIES

Storage Arrangement	Commodity Class	Max. Storage Height		Max. Ceiling/ Roof Height		Type of System	Number of Design Sprinklers	Min. Operating Pressure	Max. Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
		ft	m	ft	m						
Sprinkler protection criteria for open-frame rack storage	Class I through Class IV, encapsulated and unencapsu-lated, and cartoned non-expanded plastics	25	7,6	30	9,1	Wet	6	30 psi (2,1 bar)	14 ft x 14 ft (4,3 m x 4,3 m)	250 gpm (950 L/min)	1
		30	9,1	35	11	Wet	8	40 psi (2,8 bar)	12 ft x 12 ft (3,7 m x 3,7 m)	250 gpm (950 L/min)	1
		30	9,1	35	11	Wet	8	40 psi (2,8 bar)	14 ft x 14 ft (4,3 m x 4,3 m)	500 gpm (1900 L/min)	1.5

TABLE B
NFPA 13, CHAPTER 21 - ALTERNATIVE SYSTEM DESIGN
OPEN-FRAME RACK (SINGLE, DOUBLE, AND MULTIPLE ROW) STORAGE
OF CLASS I - IV AND CARTONED NON-EXPANDED PLASTIC COMMODITIES

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product description and Part Number (P/N).

Sprinkler Assemblies with 1 Inch NPT Pipe Threads
Specify: Model EC-25 Extended Coverage Upright Sprinkler (TY9128), (specify) temperature rating, natural brass, and P/N (specify):

165°F (74°C) . . . . . P/N 58-450-1-165
214°F (101°C) . . . . . P/N 58-450-1-214

"Special Order" Sprinkler Assemblies with ISO 7-R1 Pipe Threads
Specify: Model EC-25 Extended Coverage Upright Sprinkler (TY9128) with ISO 7-R1 pipe thread, (specify) temperature rating, natural brass, and P/N (specify):

165°F (74°C) . . . . . P/N 58-451-1-165
214°F (101°C) . . . . . P/N 58-451-1-214

Sprinkler Wrench
Specify W-Type 1 Sprinkler Wrench, P/N 56-872-1-025

tyco Fire Protection Products

Series TY-B and TY-FRB Poly-Stainless Sprinklers

IMPORTANT

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

docs.jci.com/tycofire/tfp682

General Description

The TYCO Series TY-B and TY-FRB Poly-Stainless Sprinklers are corrosion resistant sprinklers designed for use in commercial occupancies where corrosive atmospheres may exist.

The series characteristics are as follows:

TY-B Series
- 5 mm diameter heat sensitive glass bulb
- Standard response (SR) rating

TY-FRB Series
- 3 mm diameter heat sensitive glass bulb
- Quick response (QR) rating

Although corrosion resistant sprinklers have passed the standard corrosion tests of the applicable approval agencies, the testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of this coating material for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, at a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

Upright and Pendent Sprinklers

The upright and pendent sprinklers are standard coverage spray sprinklers available in either 5.6 or 8.0 K-factor. The recessed version is intended for use in areas with a finished ceiling. The two-piece Style 10 (1/2 inch NPT) or Style 40 (3/4 inch NPT) recessed escutcheons provide 1/2 inch (12,7 mm) of recessed adjustment or 3/4 inch (19,1 mm) of total adjustment from the flush pendent position. The adjustment provided by the recessed escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

Horizontal Sidewall Sprinklers

The horizontal sidewall sprinklers are designed for installation along a wall or side of a beam and just beneath a smooth ceiling. Sidewall sprinklers are commonly used instead of upright and pendent sprinklers due to aesthetics or building construction considerations, where piping across the ceiling is not desirable.

A recessed version of the horizontal sidewall sprinkler can be achieved by using the Style 10 recessed escutcheon.

NOTICE

The Series TY-B and TY-FRB Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Sprinkler Identification Number (SIN)

TY-B Standard Response

TY3151 . . . Upright 5.6K, 1/2 in. NPT
TY3251 . . . Pendent 5.6K, 1/2 in. NPT
TY4151 . . . Upright 8.0K, 3/4 in. NPT
TY4251 . . . Pendent 8.0K, 3/4 in. NPT
TY3351 . . . . . HSW* 5.6K, 1/2 in. NPT

TY-FRB Quick Response

TY3131 . . . Upright 5.6K, 1/2 in. NPT
TY3231 . . . Pendent 5.6K, 1/2 in. NPT
TY4131 . . . Upright 8.0K, 3/4 in. NPT
TY4231 . . . Pendent 8.0K, 3/4 in. NPT
TY3331 . . . . . HSW* 5.6K, 1/2 in. NPT

* = Horizontal Sidewall

Model K-Factor Response	Type	Temperature Rating	Bulb Liquid Color	Sprinkler Material
				Brass
TY-B 5.6 1/2 in. NPT SR	Upright TY3151 and Pendent TY3251	135°F (57°C)	Orange	1, 2, 3
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
		360°F (182°C)	Mauve	
	Recessed* Pendent TY3251 See Figure 1	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
TY-B 8.0 3/4 in. NPT SR	Upright TY4151 and Pendent TY4251	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
		360°F (182°C)	Mauve	
	Recessed** Pendent TY4251 See Figure 1	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	

NOTES:
1. UL Listed
2. C-UL Listed
3. EAC Approved

* Installed with Style 10 (1/2 NPT) Recessed Escutcheon
** Installed with Style 40 (3/4 NPT) Recessed Escutcheon

TABLE A
POLY-STAINLESS SERIES TY-B STANDARD RESPONSE
5.6 AND 8.0 K-FACTOR UPRIGHT AND PENDENT SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

Technical Data

Approvals
UL and C-UL Listed
EAC Approved

Note: *For complete approvals information, see Tables A, B, and C.*

Maximum Working Pressure
175 psi (12,1 bar)

Temperature Rating
See Tables A, B, C, and D

Physical Characteristics

Frame	Polyester coated Brass
Button	L316 Stainless Steel*
Compression Screw	L316 Stainless Steel*
Bulb	Glass
Deflector	Copper/Bronze
Sealing Assembly	Gold Plated Beryllium Nickel w/TEFLON**

*Type L316 stainless steel (UNS 31603) per ASTM A479/479M or BS EN 1008 WN1.4404.
**Beryllium Nickel (UNS NO3360) Gold Plated per MIL G-45204, Type 3, Class 2.

Operation

The glass bulb contains a fluid which expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

The TYCO Series TY-B and TY-FRB Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency - for example, the UL Listing is based on the requirements of NFPA 13. Only the Style 10 or 40 Recessed Escutcheon, as applicable, is to be used for recessed installation.

Model K-Factor Response	Type	Temperature Rating	Bulb Liquid Color	Sprinkler Material
				Brass
TY-FRB 5.6 1/2 in. NPT QR	Upright TY3131 and Pendent TY3231	135°F (57°C)	Orange	1, 2, 3
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
	Recessed Pendent* TY3231 See Figure 2	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
TY-FRB 8.0 3/4 in. NPT QR	Upright TY4131 and Pendent TY4231	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
	Recessed Pendent** TY4231 See Figure 4	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	

NOTES:
1. UL Listed
2. C-UL Listed
3. EAC Approved

* Installed with Style 10 (1/2 NPT) Recessed Escutcheon
** Installed with Style 40 (3/4 NPT) Recessed Escutcheon

TABLE B
POLY-STAINLESS SERIES TY-FRB QUICK RESPONSE
5.6 AND 8.0 K-FACTOR UPRIGHT AND PENDENT SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

Model K-Factor Response	Type	Temperature Rating	Bulb Liquid Color	Sprinkler Material
				Brass
TY-B 5.6 1/2 in. NPT SR	Horizontal Sidewall TY3351	135°F (57°C)	Orange	1, 2, 3
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
		360°F (182°C)	Mauve	
	Recessed Horizontal Sidewall* TY3351 See Figure 5	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
TY-FRB 5.6 1/2 in. NPT QR	Horizontal Sidewall TY3331	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
	Recessed Horizontal Sidewall* TY3331 See Figure 6	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	

NOTES:
1. UL Listed
2. C-UL Listed
3. EAC Approved

* Installed with Style 10 (1/2 NPT) Recessed Escutcheon

TABLE C
POLY-STAINLESS SERIES TY-B STANDARD RESPONSE
AND POLY-STAINLESS SERIES TY-FRB QUICK RESPONSE
5.6 K-FACTOR HORIZONTAL SIDEWALL SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

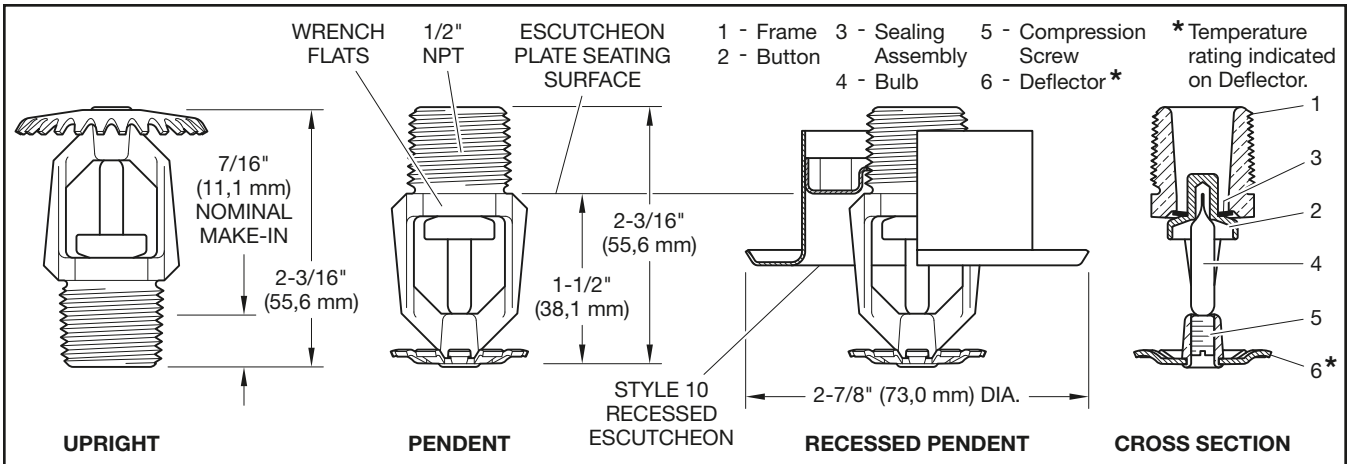

FIGURE 1
POLY-STAINLESS SERIES TY-B STANDARD RESPONSE
UPRIGHT (TY3151) AND PENDENT (TY3251) 5.6 K-FACTOR 1/2 INCH NPT SPRINKLERS

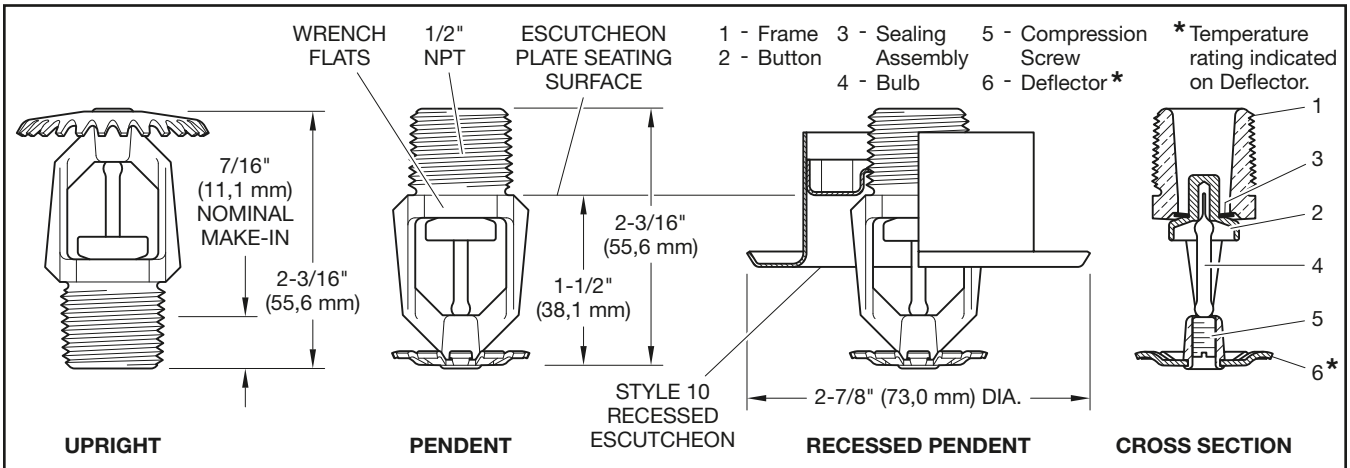

FIGURE 2
POLY-STAINLESS SERIES TY-FRB QUICK RESPONSE
UPRIGHT (TY3131) AND PENDENT (TY3231) 5.6 K-FACTOR 1/2 INCH NPT SPRINKLERS

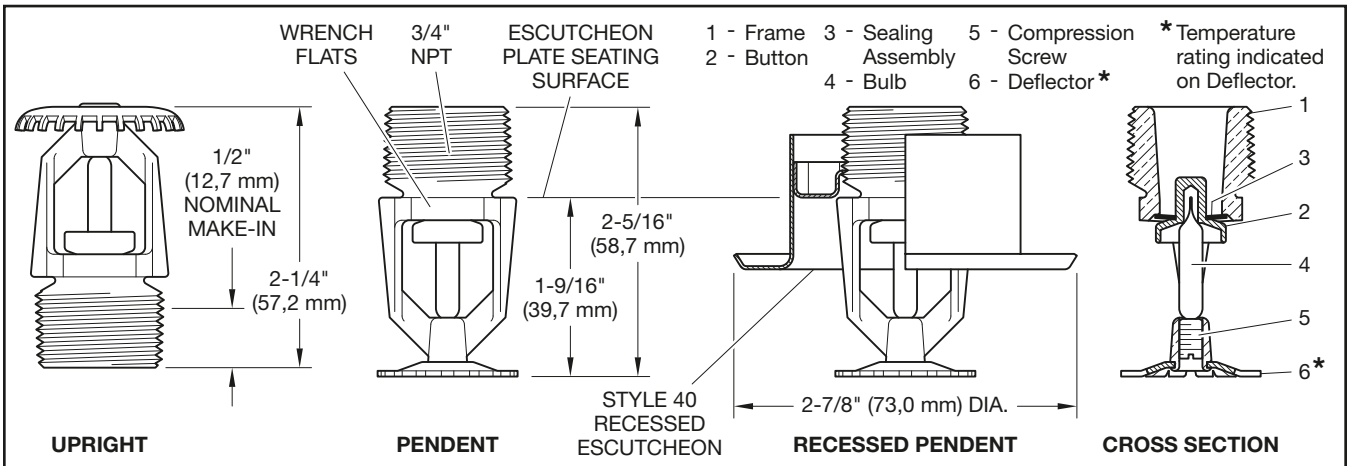

FIGURE 3
POLY-STAINLESS SERIES TY-B STANDARD RESPONSE
UPRIGHT (TY4151) AND PENDENT (TY4251) 8.0 K-FACTOR 3/4 INCH NPT SPRINKLERS

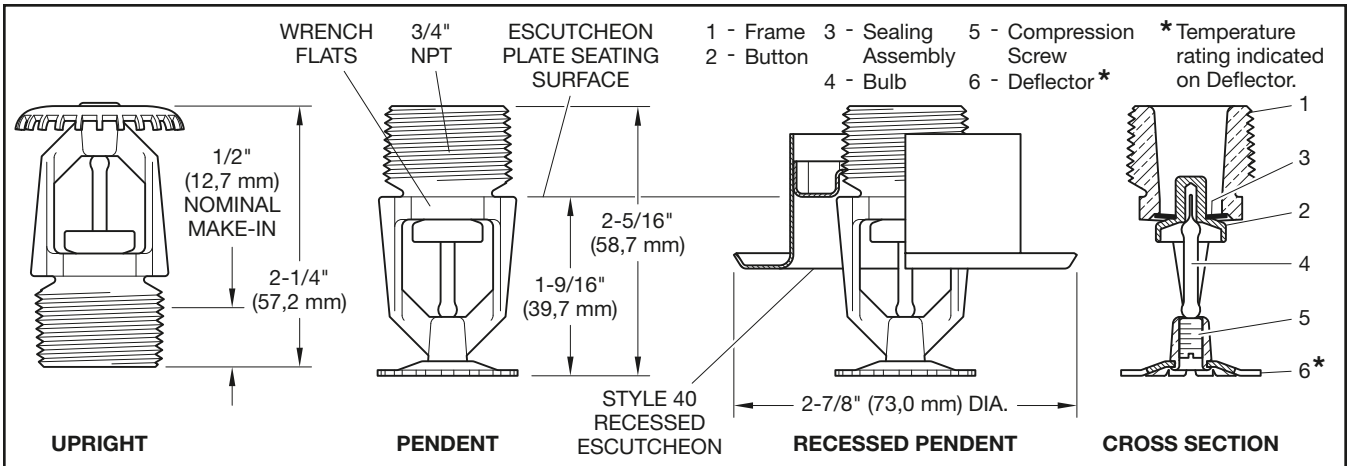

FIGURE 4
POLY-STAINLESS SERIES TY-FRB QUICK RESPONSE
UPRIGHT (TY4131) AND PENDENT (TY4231) 8.0 K-FACTOR 3/4 INCH NPT SPRINKLERS

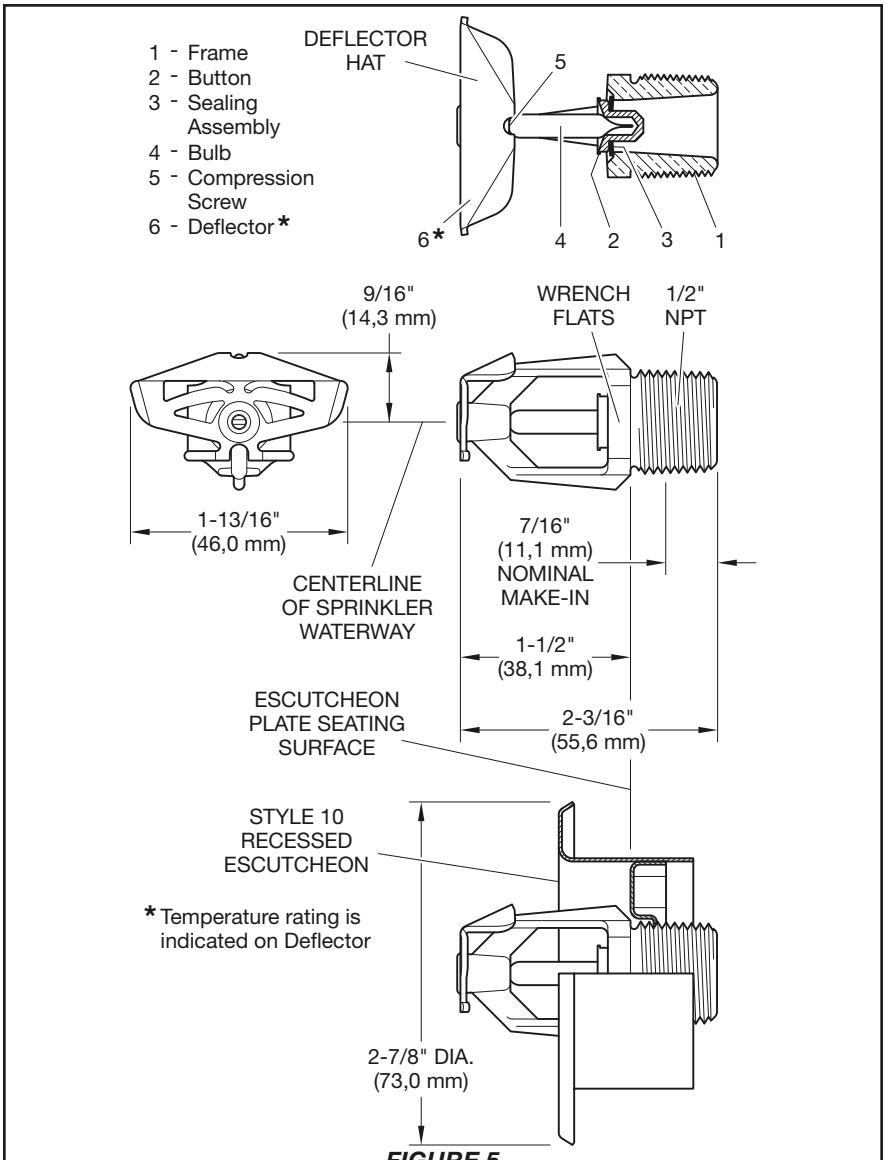

FIGURE 5
POLY-STAINLESS SERIES TY-B STANDARD RESPONSE HORIZONTAL SIDEWALL (TY3351) 5.6 K-FACTOR 1/2 INCH NPT SPRINKLERS

Installation

The TYCO Series TY-B and TY-FRB sprinklers must be installed in accordance with this section.

General Instructions

Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F (57°C) and 3/32 inch (2,4 mm) for the 360°F (182°C) temperature ratings.

A 1/2 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 7 to 14 ft-lbs (9,5 to 19,0 Nm). A 3/4 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 10 to 20 ft-lbs (13,4 to 26,8 Nm). Higher levels of torque may distort the sprinkler inlet and cause leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the sprinkler by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Upright and Pendent Sprinklers
The Poly-Stainless Series TY-B and TY-FRB Upright and Pendent Sprinklers must be installed in accordance with the following instructions:

Step 1A. Upright sprinklers must be installed in the upright position, and pendent sprinklers are to be installed in the pendent position.

Step 2A. With pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

Step 3A. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench, refer to Figure 10. With reference to Figures 1, 2, 3, and 4, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

Recessed Pendent Sprinklers
The Poly-Stainless Series TY-B and TY-FRB Recessed Pendent Sprinklers must be installed in accordance with the following instructions:

Step 1B. After installing the Style 10 or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe sealant applied to the sprinkler threads, hand tighten the sprinkler into the sprinkler fitting.

Step 2B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench, refer to Figure 11. With reference to Figures 1, 2, 3, and 4 apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step 3B. After the ceiling has been installed or the finish coat has been applied, slide the Style 10 or 40 Closure over the sprinkler and push the Closure over the Mounting Plate until it comes in contact with the ceiling mounting surface.

Horizontal Sidewall Sprinklers
The Poly-Stainless Series TY-B and TY-FRB Horizontal Sprinklers must be installed in accordance with the following instructions:

Step 1C. Horizontal sprinklers must be positioned in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word “TOP” on the deflector is to face towards the ceiling.

Step 2C. With pipe thread sealant applied to the sprinkler threads, hand tighten the sprinkler into the sprinkler fitting.

Step 3C. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench, as shown in Figure 10. Apply the W-Type 6 Sprinkler Wrench to the wrench flats shown in Figure 5 and Figure 6.

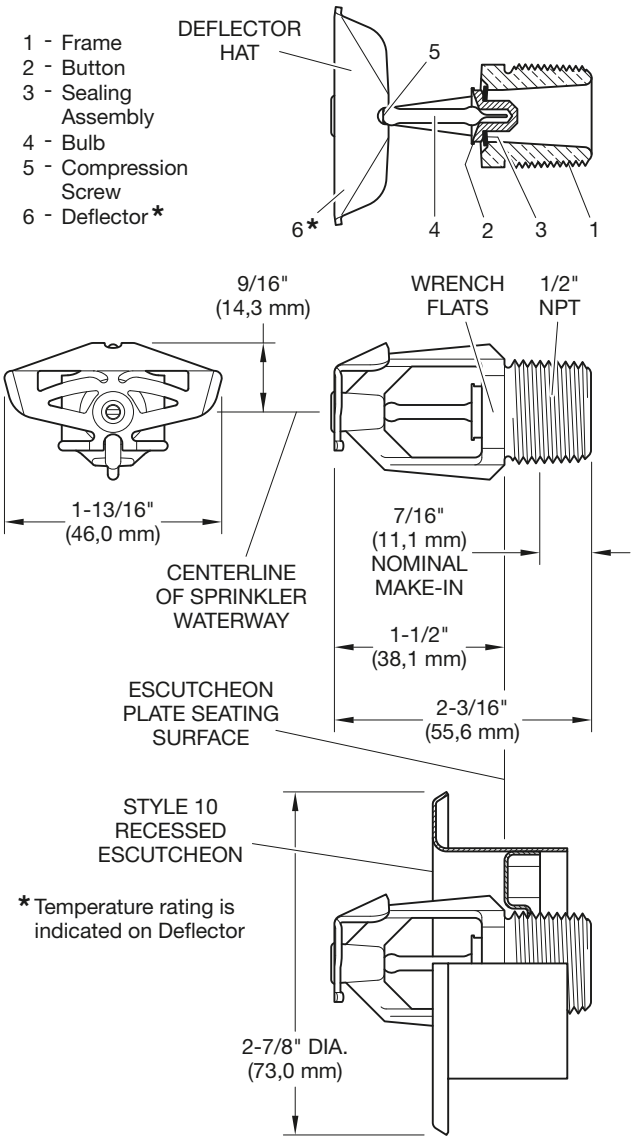

FIGURE 6
POLY-STAINLESS SERIES TY-FRB QUICK RESPONSE HORIZONTAL SIDEWALL (TY3331) 5.6 K-FACTOR 1/2 INCH NPT SPRINKLERS

Recessed Horizontal Sidewall Sprinklers
The Poly-Stainless Series TY-B and TY-FRB Recessed Horizontal Sidewall Sprinklers must be installed in accordance with the following instructions:

Step 1E. Recessed horizontal sidewall sprinklers are to be positioned in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word “TOP” on the deflector is to face towards the ceiling.

Step 2E. After installing the Style 10 Mounting Plate over the sprinkler threads and with pipe thread sealant applied to the sprinkler threads, hand tighten the sprinkler into the sprinkler fitting.

Step 3E. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench, refer to Figure 11. Apply the W-Type 7 Sprinkler Wrench to the wrench flats shown in Figure 5 and Figure 6.

Step 4E. After the wall has been installed or the finish coat has been applied, slide the Style 10 Closure over the sprinkler and push the Closure over the Mounting Plate until it comes in contact with the wall mounting surface.

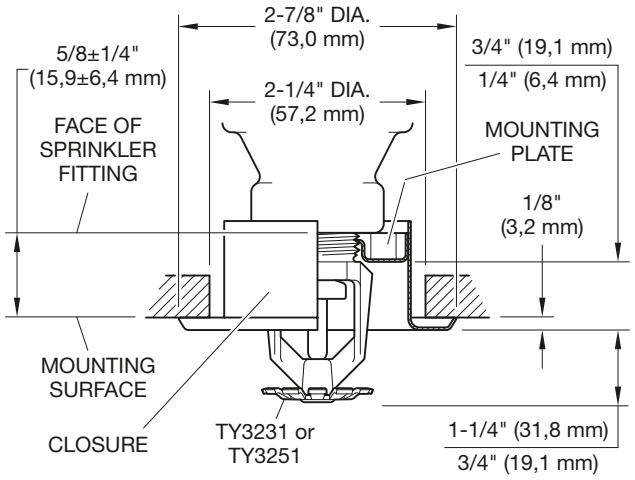

FIGURE 7
POLY-STAINLESS SERIES TY-B OR TY-FRB RECESSED PENDENT 5.6 K-FACTOR 1/2 INCH NPT SPRINKLER ASSEMBLY WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT STYLE 10 RECESSED ESCUTCHEON

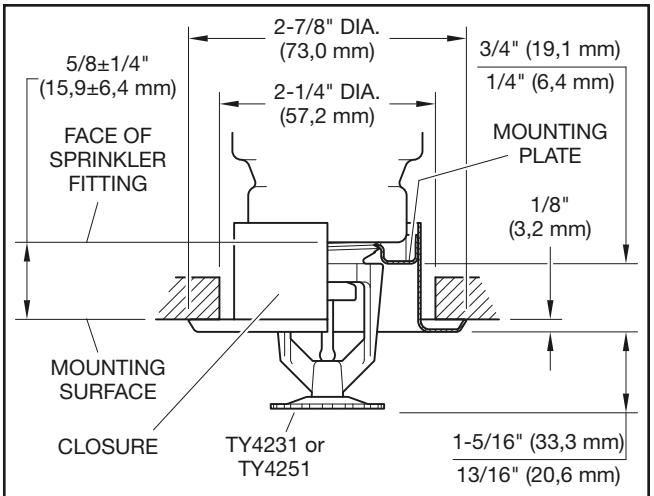

FIGURE 8
POLY-STAINLESS SERIES TY-B OR TY-FRB RECESSED PENDENT 8.0 K-FACTOR 3/4 INCH NPT SPRINKLER ASSEMBLY WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT STYLE 40 RECESSED ESCUTCHEON

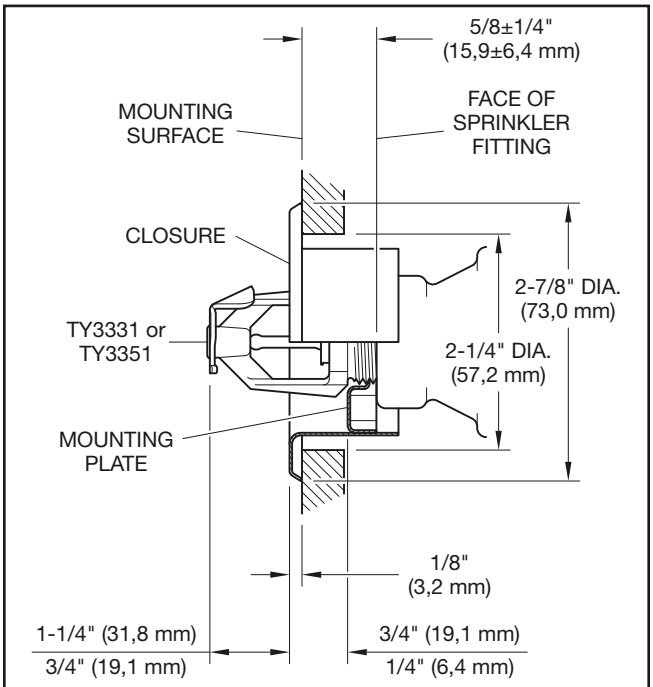

FIGURE 9
POLY-STAINLESS SERIES TY-B OR TY-FRB RECESSED HORIZONTAL SIDEWALL 5.6 K-FACTOR 1/2 INCH NPT SPRINKLER ASSEMBLY WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT STYLE 10 RECESSED ESCUTCHEON

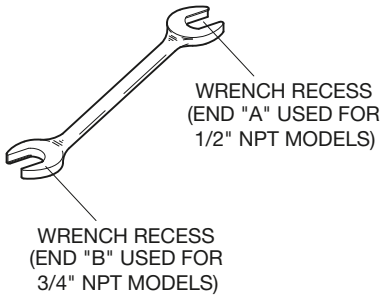

FIGURE 10
W-TYPE 6 SPRINKLER WRENCH

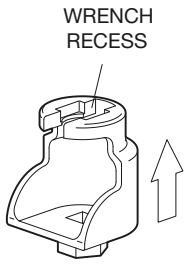

FIGURE 11
W-TYPE 7 SPRINKLER WRENCH

Care and Maintenance

The TYCO Series TY-B and TY-FRB Sprinklers must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

The owner must assure that the sprinklers are not used for hanging of any objects; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Absence of an escutcheon, which is used to cover a clearance hole, may delay the time to sprinkler operation in a fire situation.

Sprinklers that are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. For more information, see the Installation section.

Frequent visual inspections are recommended to be initially performed for corrosion resistant sprinklers, after the installation has been completed, to verify the integrity of the corrosion resistant material of construction.

P/N 57 — XXX — X — XXX

	Standard Response (SR)	SIN
570	TY-B 5.6K Upright SR	TY3151
590	TY-B 8.0K Upright SR	TY4151
571	TY-B 5.6K Pendent SR	TY3251
591	TY-B 8.0K Pendent SR	TY4251
578	TY-B 5.6K HSW SR	TY3351

	Quick Response (QR)	SIN
370	TY-FRB 5.6K Upright QR	TY3131
390	TY-FRB 8.0K Upright QR	TY4131
371	TY-FRB 5.6K Pendent QR	TY3231
391	TY-FRB 8.0K Pendent QR	TY4231
378	TY-FRB 5.6K HSW QR	TY3331

	Temperature Rating
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)
360	360°F (182°C)*

* TY-B - Only

	Sprinkler Finish
2	Grey Aluminium (RAL9007)

TABLE D
POLY-STAINLESS SERIES TY-B AND TY-FRB
UPRIGHT, PENDENT AND HORIZONTAL SIDEWALL SPRINKLERS
PART NUMBER SELECTION

Thereafter, annual inspections according to NFPA 25 should suffice; however, instead of inspecting from the floor level, a random sampling of close-up visual inspections should be made, so as to better determine the exact sprinkler condition and the long term integrity of the corrosion resistant material of construction, as it may be affected by the corrosive conditions present.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association such as NFPA 25, in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assemblies
Specify: (specify SIN), (specify Standard Response or Quick Response), (specify K-factor), (specify) temperature rating, (specify Upright, Pendent or HSW), P/N (specify from Table D)

Recessed Escutcheon
Specify: Style (specify 10 or 40) Recessed Escutcheon, Grey Aluminum (RAL9007) finish, P/N (specify*)

*Refer to Technical Data Sheet TFP770.

Sprinkler Wrench
Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Recessed Sprinkler Wrench, P/N 56-850-4-001

1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220

Johnson Controls

TFP682
Change History Appendix

ISSUE DATE	NOTES
08-22	Technical Data Sheet TFP682 is reinstated to describe Series TY-B and TY-FRB Poly-Stainless 5.6 and 8.0 K-factor Upright, Pendent and Horizontal Sidewall Sprinklers, consolidated from individual Technical Data Sheets TFP151, TFP161, TFP171 and TFP176. SIN numbers from these data sheets supersede those in original cancelled edition of TFP682. Other changes: Page 1, added QR code and URL to allow convenient access to electronic version from printed document; Page 2, Approvals sub-section, and Pages 2, 3 and 4, Tables A, B and C, added EAC Approved; Page 10, changed corporate address and telephone number to 1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220, formerly 1400 Pennbrook Parkway, Lansdale, PA 19446 | Telephone +1-215-362-0700.
—	Technical Data Sheet TFP682 describing Series TY-B and TY-FRB Poly-Stainless Upright and Pendent K=5.6 and 8.0 Sprinklers is cancelled. Product now described in Technical Data Sheets TFP151, TFP161, TFP171, TFP176 as applicable.
01-18	New Technical Data Sheet TFP682 describes Series TY-B and TY-FRB Poly-Stainless Upright and Pendent K=5.6 and 8.0 Sprinklers.

All of the steel pipe to be used on this project meets or exceeds the requirements of one or more of the following standards as required by Section 6.3.2, 6.3.3 & 6.3.7.10 of NFPA 13-2013 edition:

ASTM A795 **Specification for Black and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use**

ANSI/ASTM A 53 **Specification for Black and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless Steel Pipe**

ASTM A 135 **Specification for Electric – Resistance Welded Steel Pipe**

Manufacturers may vary. As per Section 6.3.2, 6.3.3 & 6.3.7.10 of NFPA 13-2013 edition, all piping shall be marked along its length to properly identify its type, schedule and manufacturing standard.

Additional approvals or listings are not required when:

1. Steel pipe meeting the above referenced ASTM specifications is used and joined by welding or roll-grooved pipe and fittings, the minimum nominal wall thickness for pressures up to 300 psi shall be in accordance with Schedule 10 for sizes up to 6 inches and .188 inches for 8" – 10" pipe.
2. Steel pipe meeting the above referenced ASTM specifications is used and joined by threaded fittings, the minimum wall thickness shall be in accordance with Schedule 40 in sizes less than 8 inches for pressures up to 300 psi.

Exception: Pipe meeting the above referenced ASTM specifications with wall thickness and pressure limitations less than Schedule 40 for threading or Schedule 10 for welding and roll-grooving, which have been investigated for suitability in automatic sprinkler installations and listed for this service, shall be permitted when installed in accordance with their UL or FM listing limitations.

All steel piping is to be installed in strict accordance with the guidelines of NFPA 13 and therefore requires no special submittal of specific manufacturer's installation instructions.

All fittings to be used on this project meets or exceeds the requirements of one or more of the following standards as required by Section 6.4 of NFPA 13-2013 edition:

ASME B16.4 Cast Iron Threaded Fittings, Class 125 and 250

ASME B16.3 Malleable Iron Threaded Fittings, Class 150 and 300

ASME B16.9 Factory-Made Wrought Steel Buttweld Fittings

ASME B16.25 Buttwelding End for Pipe, Valves, Flanges, & Fittings

ASTM A 234 Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures

Threaded Fittings

All threaded fittings shall have threads cut to ASME B1.20.1, Pipe Threads, General Purpose (Inch), per Section 6.5.1.1 of NFPA 13-2013 Edition.

Manufacturers may vary. All fittings shall be of the same manufacturer for a single project. Acceptable Manufacturers may include:

- AnvilStar
- Anvil
- Smith Cooper
- Vanderwater International
- BIS

All threaded fittings shall be installed in strict accordance with the guidelines of NFPA 13 and therefore requires no special submittal of specific manufacturer's installation instructions.

Welded Fittings

All welded fittings shall be in accordance with Section 6.5.2.2 through 6.5.2.6, NFPA 13-2013 Edition. Welded sprinkler pipe shall be shop welded.

Manufacturers of welded outlets may vary. All fittings shall be of the same manufacturer for a single project.

Acceptable Manufacturers may include:

- Aegis technologies
- Sigma Piping Products
- Anvil/Merit
- Smith Cooper

All welded fittings shall be installed in strict accordance with the guidelines of NFPA 13 and therefore requires no special submittal of specific manufacturer's installation instructions.

Grooved Fittings

All grooved joints shall contain cut, rolled, or cast grooves that are dimensionally compatible with the couplings, per Section 6.5.3.1 of NFPA 13-2013 Edition. All grooved couplings and fittings shall be listed in compliance with standardized groove specifications.

Manufacturers may vary. All fittings shall be of the same manufacturer for a single project.
Acceptable Manufacturers may include:

- Victaulic/Firelock
- Anvil
- Titus

All grooved fittings shall be installed in strict accordance with the guidelines of NFPA 13 and therefore requires no special submittal of specific manufacturer's installation instructions.

Cox Fire Protection
Hanger Submittal

All Hangers to be used on this project meets or exceeds the requirements standards required by Section 9.1 of NFPA 13-2013 Edition.

All sprinkler piping shall be supported from the building structure. The components of hanger assemblies shall that attach directly to the building structure and pipe shall be listed. Hanger spacing shall not exceed the limits provided in NFPA 13-2013 Edition.

Hanger Rod

All threaded rod shall meet the requirements of NFPA 13-2013 Edition, Section 9.1.2.

Manufacturers may vary. All rod shall be of the same manufacturer for a single project.
Acceptable Manufacturers may include:

- Erico
- Caddy
- Anvil
- Vulcan
- FPPI

Concrete Fasteners

Concrete Fasteners shall be a listed insert set in concrete or list post-installed anchor.

Manufacturers may vary. All fasteners shall be of the same manufacturer for a single project.
Acceptable Manufacturers may include:

- Sammy
- Hilti
- Red Head
- Lansdale
- Simpson
- FPPI

All fasteners shall be installed in strict accordance with the guidelines of NFPA 13 and therefore requires no special submittal of specific manufacturer's installation instructions.

Cox Fire Protection
Hanger Submittal

Steel Attachment
Steel attachments shall be a listed drilled fastener or listed beam clamp. Drilled fasteners may attach to the beams, purlins, deck or any other acceptable steel structure.

Manufacturers may vary. All fasteners/clamps shall be of the same manufacturer for a single project.
Acceptable Manufacturers may include:

- Sammy (Including Sammy Xpress)
- Anvil
- Globe Pipe Hangers
- nVent (Caddy & Erico)

All steel fasteners & clamps shall be installed in strict accordance with the guidelines of NFPA 13 and therefore requires no special submittal of specific manufacturer's installation instructions.